

DILLINGHAM (DLG) AIRPORT LAYOUT PLAN NARRATIVE REPORT

A. Purpose

The purposes of this Airport Layout Plan (ALP) update for the Dillingham Airport (DLG) are to compare existing conditions with the facility requirements warranted by current standards in conjunction with the aeronautical forecast, and to propose a phased program of improvements that would feasibly address the projected requirements. Because runway safety areas (RSA) are a top priority under the Federal Aviation Administration (FAA) Order 5200.8 and United States Public Law (PL) 109-115, and because the cost of standard RSA improvements would greatly exceed available funding, a practicability study (DOWL HKM, February 2011) was completed and re-evaluated in February of 2012 to establish limits for near-term projects and the main features of the ultimate plan.

This ALP is updated according to FAA Advisory Circulars *Airport Master Plans 150/5070-6B* and *Airport Design 150/5300-13*, and follows the guidance prescribed in the State of Alaska Department of Transportation and Public Facilities (DOT&PF) publication *Preparation and Submittal Guide for Airport Layout Plan and Narrative Report* dated May 14, 2008. This ALP supersedes the one previously approved by FAA on June 30, 2003.

B. Introduction

Dillingham is located in southwest Alaska along the northern end of Nushagak Bay, in northern Bristol Bay, and within the Bristol Bay Recording District. It lies 327 miles southwest of Anchorage. DLG is located 2 miles west of Dillingham's city center.

The Alaska Aviation System Plan classifies DLG as a Regional Airport because it is the air transportation hub between Anchorage and the communities in the western Bristol Bay region. The airport facilities include one paved runway (RW 1-19), three taxiways (designated A, B, and C), a main terminal apron with terminal buildings, and a general aviation apron. In 2010 there were 51,642 total aircraft operations and 30,780 total passenger enplanements recorded (Table 2). The airport is owned and operated by DOT&PF.

C. Aviation Activity

The previous Airport Reference Code (ARC) for DLG was C-III. In order to determine whether the ARC C-III should be retained or revised, an in-depth aeronautical forecast was conducted in 2010 to identify the current fleet mix and future critical aircraft, or design aircraft, at DLG. The design aircraft is typically the most demanding aircraft (in terms of total volume of aircraft

operations and type of aircraft seeking to operate at the airport) that conducts at least 500 annual operations at the airport (Section 102.a-(8), AC 150/5325-4B). The design aircraft identified in the current forecast is the Boeing 737(ARC C-III).

Air service between Dillingham and Anchorage has included scheduled passenger, freight, and mail service, with on-demand charter service provided by both air taxis and scheduled carriers. A large air carrier provides primarily scheduled passenger service between Dillingham and Anchorage during the summer. A regional air carrier provides scheduled passenger service during the winter and year round commuter service. Other regional air carriers also provide scheduled air cargo-only service. Passengers, freight, and mail traveling from Anchorage must transfer from an air carrier to a commuter carrier at Dillingham. Commuter air carriers provide service between Dillingham and nearby communities.

Dillingham is a designated postal hub. In 2009, bypass mail to the outlying communities comprised most of the mail and freight through Dillingham, with passenger flights carrying much of the mail volume and roughly a third of the freight volume.

The majority of general aviation traffic comes from local residents and federal and state aircraft. Other traffic includes medical evacuations and military operations, which can include the C-17 aircraft and helicopters.

Based aircraft at DLG in 2010 include 43 locally-owned planes. FAA records count 122 planes registered in Dillingham. Table 1 lists aircraft based at Dillingham Airport year-round.

Table 1: Based Aircraft at Dillingham Airport in 2010

Scheduled Airlines		Air Taxis & Charter Service Aircraft	General Aviation Aircraft
Passenger Service Aircraft	Cargo-Only Service Aircraft		
3 Cessna 208s 2 Cessna 207s 2 Piper PA-32s	None	3 Piper PA-32s 5 Cessna 207s 1 Cessna 206 1 Cessna 185 1 Cessna 310 1 DHC-3 Otter Amphibian 1 Grumman Goose Amphibian 1 Grumman Widgeon Amphibian	22 single engine planes

Source: Southeast Strategies.

The air traffic forecast for DLG includes historic air traffic data, available information about current aircraft operations and local population and industry trends. Table 2 presents forecast data from the FAA Terminal Area Forecast System, which falls within the low to moderate growth trend.

Table 2: 2010 Dillingham Air Traffic Forecast, FAA Terminal Area Forecast System

	2010	2015	2020	2030	Average Annual Change (%)
Total Passenger Enplanements	30,780	33,622	36,739	43,875	2.1%
Air Carrier Enplanements	3,175	3,329	3,493	3,844	1.1%
Commuter Enplanements	27,605	30,293	33,246	40,031	2.3%
Operations					
Air Carriers	1,339	1,379	1,419	1,499	0.6%
Commuter/Air Taxi	37,223	39,106	41,079	45,294	1.1%
General Aviation - Itinerant	10,986	10,986	10,986	10,986	0.0%
General Aviation - Local	2,083	2,083	2,083	2,083	0.0%
Military	11	11	11	11	0.0%
TOTAL OPERATIONS	51,642	53,565	55,578	59,873	0.8%

Source: Federal Aviation Administration Terminal Area Forecasts 2010, Southeast Strategies.

D. Airport Features

The airport comprises Runway (RW) 1-19 (6,404 feet long by 150 feet wide), with a pavement surface of bituminous asphalt and with edge lights, two paved exit taxiways (TW A, B) connecting the runway, with the main terminal apron (470'x1680'), and TW C, which connects the main terminal apron to the gravel-surface general aviation apron. Approach lighting and navigational aids currently serving RW 1-19 include:

- High Intensity Runway Lighting (HIRL),
- VHF Omni-Directional Radio / Distance Measuring Equipment (VOR/DME),
- Runway End Identifier Lights (REIL),
- RW 19 Localizer/Distance Measuring Equipment (LOC/DME),
- RW 19 Visual Approach Slope Indicator (VASI),
- RW 1 Precision Approach Path Indicator (PAPI),
- RW 19 Omnidirectional Approach Lighting System (ODALS).

E. Unusual Airport Features

This ALP update has identified the following deficiencies:

1. *Runway Safety Area (RSA)*: The existing RSA does not meet current design standards (500 feet wide by 1,000 feet beyond each runway end) for a C-III runway. The existing RSA width varies between 200 feet wide on RW end 1 to 300 feet wide on RW end 19. The RSA length beyond RW end 1 is 289 feet and 200 feet beyond RW end 19. The existing access road lies within the runway safety.

Resolution: The near-term stage incrementally improves the RSA width on the west side and length beyond the runway end to better conform to FAA standards. The improvements also include closing a portion of the existing access road, which runs north around RW end 19.

2. *Line of Sight*: There is a requirement for objects 5 feet in height to be mutually visible for the entire length of the runway. Due to previous runway construction over considerable peat (16-ft deep in areas along RW end 19), runway settlement caused approximately 10 feet of elevation change between runway ends thus creating a line-of sight problem.

Resolution: In the long-term/ultimate stage, the runway would shift 150 feet west and the runway profile would flatten to achieve line-of-sight requirements.

3. *Runway Object Free Area (ROFA) penetration*: Trees alongside the runway penetrate the ROFA and the 500 feet wide primary surface. Buildings south of RW end 1 penetrate the ROFA. Portions of Kananak Road, Wood River Road, and the existing access road encroach on the ROFA.

Resolution: Tree obstructions will be removed, mostly in the near term. Shifting the runway centerline 150 feet west in the long-term/ultimate stage removes one of the building penetrations. A portion of the roads and one building southeast of RW end 1 must be removed or relocated to satisfy OFA standards. The existing access road section will be closed.

4. *Runway Protection Zone (RPZ) and airport property encroachments*: The RPZs for both runway ends extend beyond the fee simple airport boundary. DOT&PF has aviation and hazard easements; however, these easements are only for Part 77 penetrations. Buildings encroach on the RPZ at both runway ends, as shown in the ALP. Private development, roads and a residential access road encroach on airport property.

Resolution: In the near-term stage, DOT&PF will provide an alternate route to residents

by extending West Airport Road. . In the long-term stage, the improvements include shifting the runway centerline 150 feet west, which removes the building encroachment into the RPZ northeast of RW end 19. However, a portion of the building southeast of RW end 1 remains an RPZ encroachment and must be removed to meet standards.

Existing land use conditions that conflict with airport standards include:

- A section of the existing access road, north along RW end 19, penetrates the Part 77 primary and approach surfaces.

Resolution: The near-term stage includes removing the roadway section.

- Terrain that includes a local cemetery extends into the RSA and ROFA.

Resolution: The long-term/ultimate stage includes shifting the runway centerline 150 feet west, which will result in the local cemetery no longer being within the RSA. The ROFA penetration will remain.

Geotechnical conditions in the area compound additional non-standard airport conditions at DLG. Varying depths of peat found in the area adds significant embankment construction costs to all the RSA alternatives.

F. Summary of Staged Development with Estimated Costs

The proposed development for DLG, which incorporates encroachment reductions, correction to the runway line-of-sight, and RSA improvements, follow a phased approach that includes near-term (within five years) and long-term/ultimate, extending beyond 2017 (Figure 1). In the near-term phase, the existing runway would remain at 6400' with improved safety areas. Using declared distances in the long-term/ultimate phase the takeoff distance available (TODA) and takeoff runway available (TORA) would provide an additional 400 feet for takeoff, or 6,800 feet and would fully conform to RSA standards.

Near-term Development

The initial near-term RSA development constructs 310 feet and 1,000 feet of RSA embankment on RW end 1 and RW end 19, respectively. This initial construction incrementally improves the RSA to the extent feasible, according to FAA guidance. The RSA width is increased to 250 feet from centerline on the west side. The RSA dimensions on the east side of the runway centerline remain the same during the near-term phase. With these expansions, the southerly RSA beyond threshold meets standards for approaches, the northerly RSA beyond threshold meets standards for both approaches and departures, the lateral RSA meets standards to the west and remains deficient to the east. There are anticipated impacts to navigational aids that require coordination

with FAA. An adjustment to the ODALS is necessary to accommodate the RSA embankment construction.

- Near-term Development Estimated Cost = \$21 million

Long-term/Ulimate Development

The long-term/ultimate development constructs the embankment length and width for a full RSA that complies with FAA standards. The existing runway centerline shifts 150 feet west to reduce OFA and controlled airspace penetrations and encroachments and RPZ deficiencies. Implementing declared distances achieves full RSA length beyond the runway ends (600 feet for arrivals and 1000 feet for departures), and embankment construction widens the RSA on the west side by 150 feet. This work will cost about \$31 million.

Additional key improvements include reconfiguring the runway profile to correct the line-of-sight issue, adding a parallel taxiway along the northwest end of RW 19, and expansion of the main terminal apron and building.

A full length parallel taxiway along the west side of RW 1-19, approximately 50 feet wide by 5,500 feet long would improve safety, efficiency, and capacity. Challenges identified with the construction of a parallel taxiway include impacts to existing facilities and features such as the local wetlands, an existing automated weather observing system (AWOS) south of the main terminal, an existing maintenance road, a security fence, and existing utilities. This improvement will cost about \$8 million.

Existing concerns with the main terminal building and apron identified in the Dillingham Airport Master Plan (June 2005) highlight limited aircraft parking and enclosed parking facilities, insufficient vehicle parking, and an inadequate terminal building. The cost of expanding the apron would be about \$15 million.

Land acquisition is needed to remove trees from obstacle clearance planes, and provide standard RPZs on both runway ends as well as for a proposed parallel taxiway. Involvement by the Bureau of Indian Affairs (BIA) with the land acquisition process is expected because some properties are restricted native allotments. Accordingly, these property acquisitions would likely require more time and coordination effort than simpler transactions. The cost of expanding the property limits as needed for these reasons would be about \$12 million.